

**GENERAL CERTIFICATE OF SECONDARY EDUCATION  
MATHEMATICS B (MEI)**

**B292A**

Paper 2 Section A (Foundation Tier)

Candidates answer on the Question Paper

**OCR Supplied Materials:**  
None

**Other Materials Required:**

- Geometrical instruments
- Tracing paper (optional)

**Friday 15 January 2010  
Morning**

**Duration: 1 hour**



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this Section is **50**.
- This document consists of **12** pages. Any blank pages are indicated.

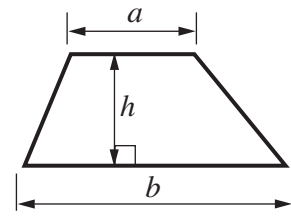
**WARNING**



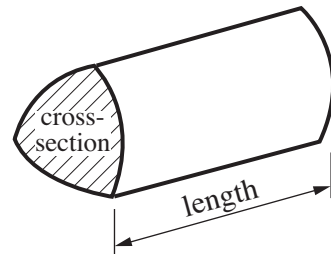
No calculator can be used for Section A of this paper

**Formulae Sheet: Foundation Tier**

**Area of trapezium** =  $\frac{1}{2} (a + b)h$



**Volume of prism** = (area of cross-section)  $\times$  length



**PLEASE DO NOT WRITE ON THIS PAGE**

- 1 James has some parcels to be delivered.  
The table shows the prices that a courier company charges.

Weight of parcel	Delivery in UK	Delivery in Europe
less than 0.5 kg	£14	£32
between 0.5 kg and 1 kg	£16	£35
between 1 kg and 1.5 kg	£18	£38
between 1.5 kg and 2 kg	£20	£41
between 2 kg and 2.5 kg	£22	£44

Complete this bill.

Number of parcels	Parcel weight (kg)	Delivery in	Cost (£)
1	1.2	.....	38
1	0.7	Europe	.....
10	2.4	UK	.....
<b>Total</b>			.....

[4]

- 2 (a) Write  $\frac{1}{2}$  as a percentage.

(a) .....% [1]

- (b) Write 25% as a fraction.

(b) ..... [1]

- (c) Write  $\frac{3}{4}$  as a decimal.

(c) ..... [1]

3

	<b>York</b>	<b>London</b>
<b>Train A</b>	08:12	10:14
<b>Train B</b>	08:36	10:40
<b>Train C</b>	08:49	11:13

The table shows part of a train timetable from York to London.

- (a) Which train takes the shortest time?  
How long does this train take?

(a) Train .....

..... hours and ..... minutes [2]

- (b) Another train takes exactly 2 hours to travel the 300 kilometres from London to York.

Calculate the average speed of this train.

(b) ..... km/h [2]

4 A rock group is giving a concert.

First they play a set lasting  $1\frac{1}{4}$  hours.

Then they play another set for  $\frac{1}{2}$  an hour.

- (a) How much longer is the first set than the second set?  
Give your answer as a fraction.

(a) ..... h [1]

- (b) For how long do they play in total?  
Give your answer as a mixed number.

(b) ..... h [1]

- (c) 2318 people watch the concert. They each paid £13.90 for a ticket.

**Estimate** the total amount paid.

(c) £..... [2]

- (d) The rock group play 90% of their 30 hit songs.

How many of their hit songs do they play?

(d) ..... [2]

5 Work out the following.

(a)  $6 + 7 \times 2$

(a) ..... [1]

(b)  $2 \times 5^2$

(b) ..... [1]

(c)  $\frac{8 - 6}{2}$

(c) ..... [1]

(d)  $7 \times (3^2 + 1)$

(d) ..... [2]

6 (a) In a raffle, 40 pink tickets, 50 blue tickets and 110 green tickets are sold.

Find the probability that the first ticket to be drawn is pink.  
Give your answer as a fraction in its simplest form.

(a) ..... [3]

(b) Jeremy tosses a biased coin.  
The probability that he gets a head is 0.4.

Find the probability that he gets a tail.

(b) ..... [1]

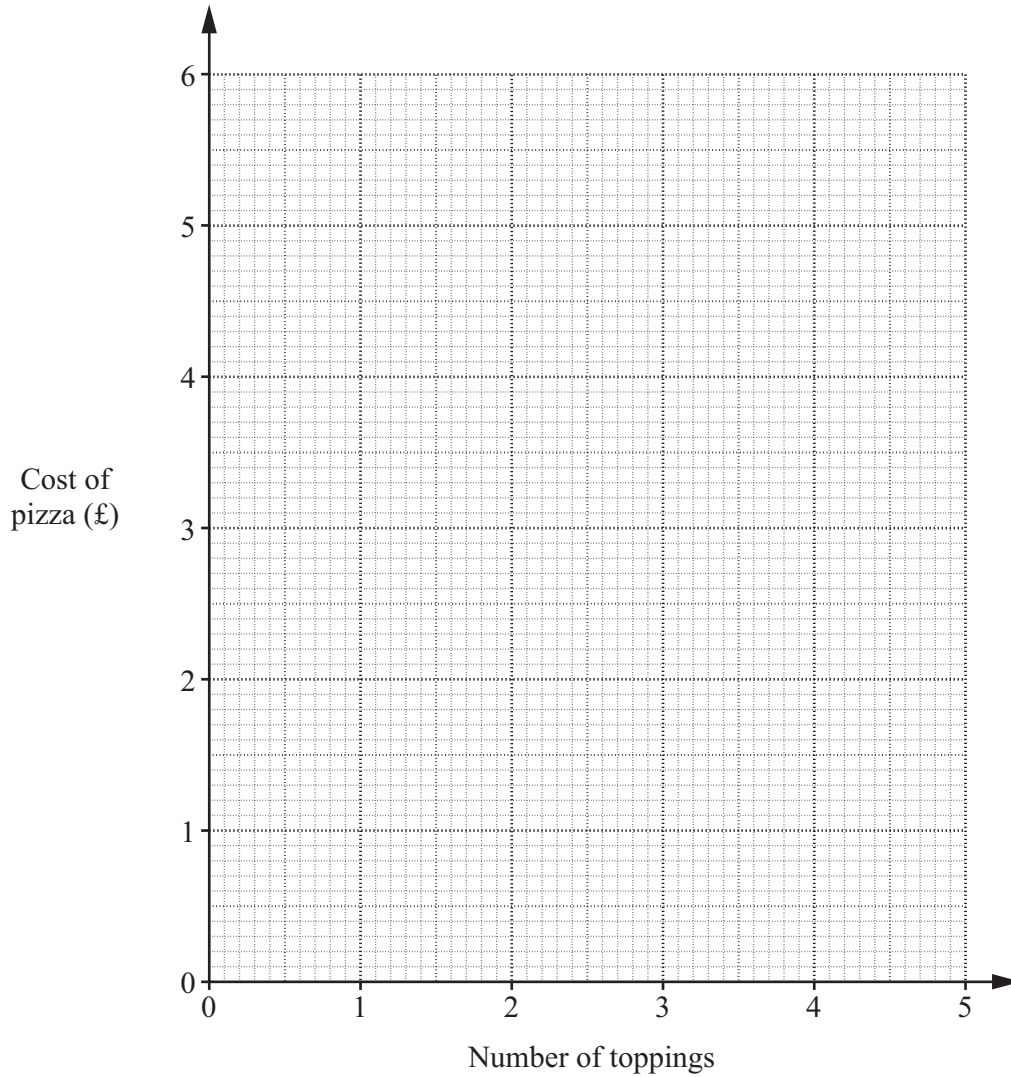
7 A takeaway sells Cheese and Tomato pizzas for £3.00 each. Extra topping costs 40p per topping.

(a) Complete the table below to show the cost of a Cheese and Tomato pizza with extra toppings.

<b>Number of extra toppings</b>	1	2	3	4	5
<b>Cost of pizza (£)</b>	3.40			4.60	

[2]

(b) On the grid, plot points to represent this information.



[2]

(c) Explain why it is not appropriate to join up these points.

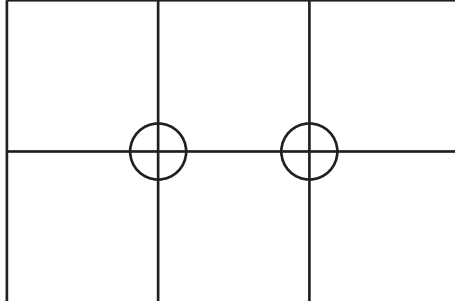
.....  
 .....

[1]

8

- 8 Square stage blocks are held together by circular connectors. A connector is used wherever the corners of four blocks meet.

Here is the diagram of a 2 by 3 stage.  
 It consists of 2 rows each containing 3 blocks.  
 It requires 2 connectors.



- (a) Draw the diagram for a 2 by 4 stage.

How many connectors are required for this stage?

(a) ..... connectors [2]

- (b) Complete this table for stages with 2 rows.

<b>Stage size</b>	2 by 2	2 by 3	2 by 4	2 by 5	2 by 6
<b>Number of connectors</b>		2			

[2]



(c) Describe the pattern in the table for the number of connectors used.

.....  
..... [1]

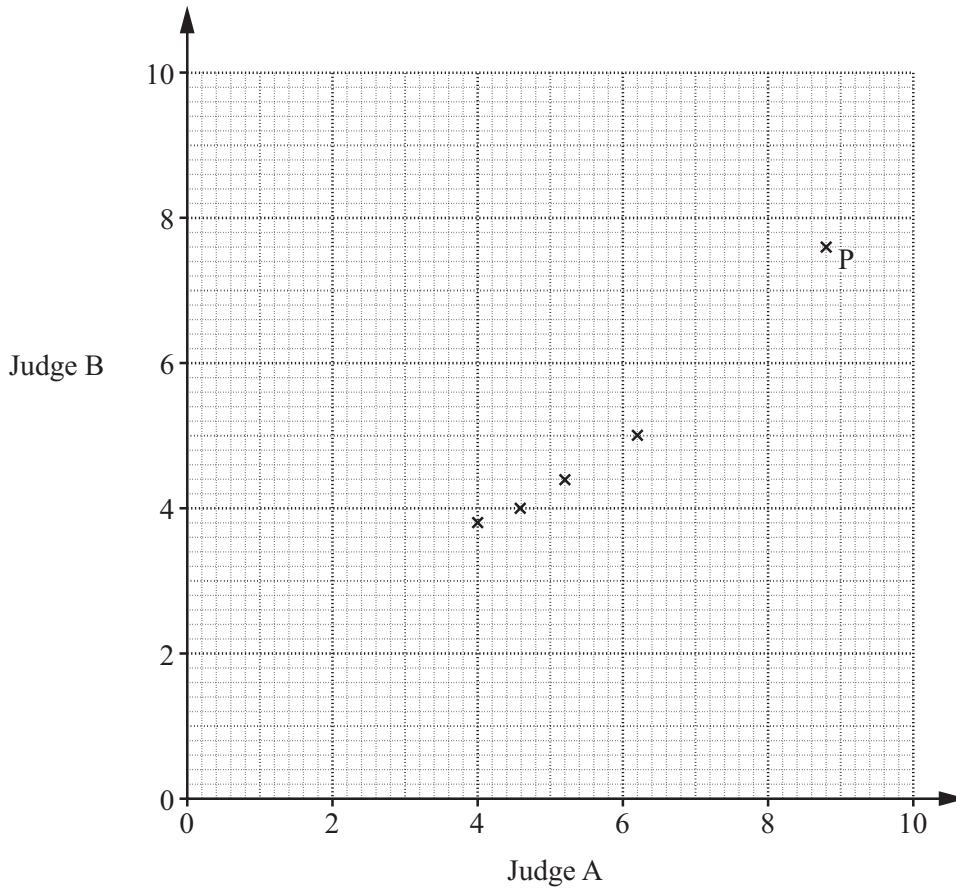
(d) How many connectors are needed for a 2 by 12 stage?

(d) ..... [1]

(e) Write down an expression for the number of connectors needed for a 2 by  $n$  stage.

(e) ..... [1]

- 9 A school is holding a dance competition.  
 Two judges each give a mark out of ten for each dancer.  
 Their marks for five dancers are shown on the scatter diagram.



(a) What marks are represented by point P?

(a) Judge A gives a mark of .....

Judge B gives a mark of ..... [1]

(b) Five more dancers are given the following marks.

Judge A	6.8	7.0	7.4	8.0	8.6
Judge B	5.2	5.6	6.8	6.6	7.0

Add this information to the scatter diagram.

[2]

(c) Describe the correlation shown in your scatter diagram.

..... [1]

(d) Draw a line of best fit for the data.

[1]

(e) Judge B gives another dancer a mark of 6.2.

Use your line of best fit to predict judge A's mark for this dancer.

(e) ..... [1]

10 (a) Show the inequality  $x \geq -2$  on the number line.



[1]

(b) Solve this inequality.

$$2x + 5 < 17$$

(b) ..... [2]

**TURN OVER FOR QUESTION 11**

11 Solve this equation.

$$5x + 3 = 4(x + 2)$$

..... [3]



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